AMENDMENTS TO THE CLAIMS

Please amend claim 45 as shown. All claims and their status are reflected below.

1. (Original) A sensing apparatus for sensing conditions in target environments in a processing facility where a standard substrate is transported in a standard substrate carrier that establishes a position of the standard substrate relative to a surface of the standard substrate carrier and where the robot of at least one processing tool is calibrated to the position of the standard substrate relative to the surface of the standard substrate carrier, comprising:

a first portion that includes:

a substrate;

a plurality of sensors attached to the substrate;

a second portion that includes:

a substrate carrier that establishes the position of the first portion relative to a surface of the substrate carrier to be the same as the position of the standard substrate relative to the surface of the standard substrate carrier;

an electronics module that communicates with the first portion, the electronics module attached to the substrate carrier; and

wherein the first portion may be moved independently of the second portion.

2. (Original) The sensing apparatus of claim 1 wherein the substrate carrier is a standard substrate carrier.

3. (Previously presented) The sensing apparatus of claim 1 wherein the position of the standard substrate relative to the surface of the standard substrate carrier is the vertical height of the standard substrate above the bottom surface of the standard substrate carrier.

4. (Original) The sensing apparatus of claim 1 further comprising:

a receiving unit attached to the substrate that receives power from the electronics module; and

a transmitting unit in the electronic module that transmits power to the receiving unit.

5. (Original) The sensing apparatus of claim 4 wherein the receiving unit is located at the center of the substrate so that when the substrate is placed in the substrate carrier the receiving unit is aligned with the transmitting unit regardless of the rotational orientation of the substrate.

6. (Original) The sensing apparatus of claim 4 wherein the receiving unit receives data from the electronics module and the transmitting unit transmits data to the receiving unit.

7. (Original) The sensing apparatus of claim 4 wherein the transmitting unit comprises an E-coil and the receiving unit comprises a conductive coil and a magnetic conductive layer.

8. (Original) The sensing apparatus of claim 1 wherein the second portion further comprises an RFID transceiver electrically connected to the electronics module so that data may be sent from the electronics module to the RFID transceiver and data may be sent from the RFID transceiver to an external receiver.

9. (Previously presented) The sensing apparatus of claim 1 further comprising:

a pattern on at least one surface of the substrate; and

an optical reading apparatus attached to the substrate carrier that reads the pattern on the substrate to determine the orientation of the substrate.

10. (Original) The sensing apparatus of claim 1 wherein the second portion further comprises an alignment module that aligns the first portion relative to the substrate carrier.

11. (Original) A sensing apparatus for sensing process conditions in a processing tool that has a robot that transfers a standard substrate between a standard substrate carrier and a process chamber, comprising:

a process condition measuring device, comprising:

a substrate;

a plurality of sensors attached to the substrate;

a handling system, comprising:

a substrate carrier that holds the process condition measuring device, the robot transferring the process condition measuring device between the substrate carrier and the process chamber; and

an electronics module attached to the substrate carrier that communicates with the process condition measuring device while the substrate carrier holds the process condition measuring device.

12. (Original) The sensing apparatus of claim 11 wherein the substrate carrier is a standard substrate carrier.

13. (Original) The sensing apparatus of claim 1 wherein the substrate carrier is a front opening unified pod (FOUP).

14. (Original) The sensing apparatus of claim 11 wherein the substrate carrier is a wafer cassette.

15. (Original) The sensing apparatus of claim 11 wherein the process condition measuring device further includes at least one battery and other components attached to the substrate and the location of the at least one battery and the other components that are attached to the substrate are configured such that the center of gravity of the substrate with the at least one battery and the other components is the same as the center of gravity of the substrate alone.

16. (Original) The sensing apparatus of claim 11 wherein the process condition measuring device further includes conductive traces connecting sensors to a CPU, at least one battery, a clock crystal and an RF inductive coil.

17 - 44. (Canceled)

45. (Currently amended) A two part apparatus for measuring process conditions within a process chamber, comprising:

a first part that includes a plurality of sensors for measuring one or more process conditions , a receiving unit that receives power and an energy storage unit attached to a substrate;

a second part that includes a housing for the first part, a power supply unit attached to the housing and a communication unit attached to the housing, the power supply unit providing power to the receiving unit of the first part and the communication unit providing communication between the first part and the second part; and

wherein the first part is housed in the second part in a first mode and is moved from the second part to the process chamber, without physical connection to the second part, in a second mode.

46. (Previously presented) The two part apparatus of claim 45 wherein the substrate is a disk with the diameter of a silicon wafer and the housing is a wafer holder.

47. (Previously presented) The two part apparatus of claim 46 wherein the power supply unit has an induction coil that inductively transmits power to the first part.

48. (Previously presented) The two part apparatus of claim 47 wherein the communication unit uses the induction coil to provide communication between the first part and the second part.

49. (Previously presented) The two part apparatus of claim 46 wherein the communication unit uses light to communicate with the first part.

50. (Previously presented) The two part apparatus of claim 45 wherein the housing is a Standard Mechanical Interface (SMIF) box or a Front Opening Unified Pod (FOUP).

51. (Previously presented) An apparatus for measuring conditions in a target environment, comprising:

a process condition measuring device that includes sensors to measure one or more process conditions in the target environment, the process condition measuring device further including a power supply and a first induction coil;

a handling system including a second induction coil, the handling system having a location to hold the process condition measuring device near the second induction coil, the first and second induction coils being inductively coupled when the process condition measuring device is at the location, the inductive coupling transferring both electrical power and data; and

the process condition measuring device being independently movable from the handling system to measure process conditions.

52. (Previously presented) The apparatus of claim 51 wherein power is transferred from the handling system to the process condition measuring device through the inductive coupling and data is transferred from the process condition measuring device to the handling system through the inductive coupling.

53. (Previously presented) The apparatus of claim 52 wherein data is also transferred from the handling system to the process condition measuring device through the inductive coupling.